

What is claimed is:

1. In a fuel cell anode structure comprising a substrate, a first carbon-based component comprising a first carbon material, and a second carbon component, said second carbon component being substantially more resistant to corrosion during cell reversal at fuel cell operating temperatures than said first carbon-based component, the improvement comprising:

said first carbon-based component having substantially no resistance to corrosion during cell reversal at fuel cell operating temperatures and said first carbon material having a BET surface area of at least $350\text{m}^2\text{g}^{-1}$.

2. The improved anode structure of claim 1 wherein said substrate is a gas diffusion layer.

3. The improved anode structure of claim 2 wherein said first carbon-based component is disposed on said gas diffusion layer.

4. The improved anode structure of claim 2 wherein said first carbon-based component is disposed within said gas diffusion layer.

5. The improved anode structure of claim 2 wherein said first carbon-based component and

said second carbon component are mixed and disposed on said gas diffusion layer.

6. The improved anode structure of claim 2 wherein said first carbon-based component and said second carbon component are mixed and disposed within said gas diffusion layer.

7. The improved anode structure of claim 2 wherein said first carbon based-component and said second carbon component are disposed in separate layers on said gas diffusion layer.

8. The improved anode structure of claim 2 wherein said first carbon based-component and said second carbon component are disposed in separate layers within said gas diffusion layer.

9. The improved anode structure of claim 1 wherein said substrate is a solid polymer electrolyte.

10. The improved anode structure of claim 9 wherein said first carbon-based component is disposed on said solid polymer electrolyte.

11. The improved anode structure of claim 9 wherein said first carbon-based component is disposed within said solid polymer electrolyte.

12. The improved anode structure of claim 9 wherein said first carbon-based component and said second carbon component are mixed and disposed on said solid polymer electrolyte.

13. The improved anode structure of claim 9 wherein said first carbon-based component and said second carbon component are mixed and disposed within said solid polymer electrolyte.

14. The improved anode structure of claim 9 wherein said first carbon-based component and said second carbon component are disposed in separate layers on said solid polymer electrolyte.

15. The improved anode structure of claim 9 wherein said first carbon-based component and said second carbon component are disposed in separate layers within said solid polymer electrolyte.

16. The improved anode structure of claim 1 wherein the second carbon component acts as a support for an electrocatalyst material.

17. The improved anode structure of claim 2, wherein said second carbon component is a carbon fill for said gas diffusion layer.

18. A membrane electrode assembly comprising the improved anode structure of

claim 1, wherein said membrane electrode assembly is voltage reversal tolerant.

19. A fuel cell comprising a membrane electrode assembly comprising the improved anode structure of claim 1.

20. A fuel cell comprising the improved anode structure of claim 1.

21. A method of improving tolerance of a fuel cell to voltage reversal, the method comprising incorporating in said fuel cell the improved anode structure of claim 1.